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Are high p-wave velocity sediments on thin Tethyan crust, deep-water carbonates?

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Seismic reflection profiles from the Central Mediterranean and Gulf of Cadiz regions indicate the widespread presence of a seismic unit, marked by strong continuous reflectors, directly overlying the basement. Seismic velocity analysis from seismic reflection and refraction studies indicate high p-wave velocities of 3.5 – 4.5 km/s in this layer. These same seismic studies image a thin crust, typically 6-9 km thick, in most cases thought to be oceanic in nature and related to the Tethys oceanic domain separating Africa (Gondwana) from Laurussia. We interpret this 2-3 km thick reflective layer to be carbonates, deposited in the late Triassic, Jurassic and early Cretaceous in the Tethys Ocean, in deep marine basins. Few drilling studies have penetrated into this layer. In one case (DSDP site 135, drilled at 4152 m water depth on Coral Patch Ridge in the western Gulf of Cadiz), Aptian (early Cretaceous) marls and limestone were drilled (560-689 m sub-seafloor depth). The Calcite compensation depth during the Jurassic to Early Cretaceous was about 4000 m to 3500 m according to compilations from the Atlantic and Indian Oceans and is consistent with deposition of deep-water carbonates. For the NW Moroccan margin (Mazagan transect near El Jadida) there is a 2 km thick sedimentary layer with p-wave velocities of 4.0 – 4.5 km/s at the base of a 4 – 6 km thick sedimentary section. This layer extends from seafloor thought to be oceanic crust (west of the West African Coast magnetic anomaly) across a domain of thin/transitional crust with abundant Triassic salt diapirs to the foot of the margin. This reflective basal layer is also observed in reflection and refraction profiles from the Seine abyssal plain, below the toe of the Cadiz accretionary wedge (S. Algarve margin), in the Ionian abyssal plain and below the toe of the Calabrian accretionary wedge, all regions floored by this thin Tethyan crust. Work is in progress to determine the exact nature of this crust.